

FINAL RADIOLOGICAL EVALUATION DATABASE – FRED

Description of Data

FRED provides a list of soil sample analytical results from projects performed by Tetra Tech EC at the Hunters Point Naval Shipyard (HPNS) as follows:

- Trench - Soil samples from the Survey Unit Project Reports (SUPRs) for each trench unit from the Sanitary Sewer and Storm Drain Removal. Trench samples refer to soil samples collected from the bottom and sidewalls of excavated trenches following removal of sewer pipes and manholes.
- Fill - Samples from onsite soil used as fill from the SUPRs from Sanitary Sewer and Storm Drain Removal including:
 - Overburden soil – Soil removed to expose the main sewer line or storm drain
 - Peripheral soil - Soil removed from 1-foot around and beneath the main sewer line or storm drain.Excavated soil - In 2007 the contractor stopped segregating overburden and peripheral soil and started calling the combined material excavated soil.

SUPRs are included as attachments to Remedial Action Completion Reports (RACRs) and Construction Summary Reports (CSRs).

FRED does not include results from:

- Static gamma measurements and scans of gamma radiation in trenches
- Gamma driveover scan surveys from onsite fill characterized at the Radiological Screening Yard (RSY)
- Alpha and beta static and scan measurements from building interiors
- Soil samples collected from reference areas
- Characterization of imported fill from offsite locations
- Sediment samples collected from pipes and manholes during the Sanitary Sewer and Storm Drain Removal
- Waste characterization samples

Description of Database Files

FRED is comprised of a series of Microsoft Excel files for accessibility and ease of use. The trench and fill soil sample data are provided by Parcel in the following files:

- Parcel B Fill Tiger Team FRED.xlsx
- Parcel B Trench Tiger Team FRED.xlsx
- Parcel C Fill Tiger Team FRED.xlsx
- Parcel C Trench Tiger Team FRED.xlsx
- Parcel D-2 Fill Tiger Team FRED.xlsx
- Parcel D-2 Trench Tiger Team FRED.xlsx
- Parcel E Fill Tiger Team FRED.xlsx
- Parcel E Trench Tiger Team FRED.xlsx
- Parcel G Fill Tiger Team FRED.xlsx
- Parcel G Trench Tiger Team FRED.xlsx

- Parcel UC1 Fill Tiger Team FRED.xlsx
- Parcel UC1 Trench Tiger Team FRED.xlsx
- Parcel UC2 Fill Tiger Team FRED.xlsx
- Parcel UC2 Trench Tiger Team FRED.xlsx
- Parcel UC3 Fill Tiger Team FRED.xlsx
- Parcel UC3 Trench Tiger Team FRED.xlsx

Description of Excel File Contents

This section describes each column of data provided in the individual files.

Column A – ClientSampleID

This column provides a unique identifier for each soil sample. The sample ID is taken from the lab reports provided as attachments to the SUPRs and FSSRs. The contractor did not use a consistent format for identifying samples throughout the project, but there are some basic similarities as follows:

- Every sample ID starts with the Contract Task Order number.
- Every trench soil sample includes the trench unit number somewhere in the sample ID.
- Every fill soil sample includes the overburden or excavation soil unit number somewhere in the sample ID.
- Every soil sample includes a sequential number indicating the order samples were collected, usually the last 2 or 3 digits. Several data sets start with 2-digit sample identifiers and switch to 3 digits when they reached 100 samples in a single survey unit.

Column B – Collected 2

This column provides the sample collection date. Sample collection date is taken from the lab reports provided as attachments to the SUPRs and FSSRs. Sometimes the collection time is provided, but most samples only include the collection date.

Column C – Nuclide

This column provides the nuclide identifier. Results in the reports were provided by at least 5 different laboratories, so this list was created to use standardized nuclide identifiers. All nuclide identifiers are the chemical symbol, followed by a hyphen, with the atomic weight to identify a specific isotope. Some things to note:

- Results reported for Ac-228 include a variety of results for Th-232 based on the Ac-228 gamma rays.
- Results reported for Ra-226 include a mixture of results based on the 186 keV gamma ray emitted by Ra-226, sometimes with corrections for U-235, and ingrowth results based on Bi-214, or a combination of Ra-226 decay products. The results based on the 186 keV peak are generally associated with the onsite laboratory, and the ingrowth results are generally associated with one of the offsite laboratories (see Column G).
- Results reported for Sr-90 include a mixture of results based on total strontium activity and purification and analysis of Sr-90. In some cases, there are two results reported for the same sample when both analyses were performed.

Column D – Result

This column provides the radionuclide concentration reported in pCi/g. Result is taken from the lab reports provided as attachments to the SUPRs and FSSRs.

Column E – Survey Type

This column provides the reason the sample was collected. All samples have been divided into three categories for evaluation:

- Final Systematic Samples – Also called final status survey (FSS) samples, these are the final samples collected from random-start systematic grid locations that were used to support decisions regarding property transfer. At a minimum, all survey units include final systematic samples.
- Characterization Samples – Samples collected from random-start systematic grid locations prior to the final status survey being performed.
- Bias Samples – Sometimes referred to as bias characterization, remedial action support, or confirmation samples. These are samples collected from bias locations prior to the final status survey being performed.

There are six possible entries in this column:

- FSS-SYS - Final systematic samples.
- SYS_1 and SYS_2 - Characterization samples. SYS_1 may refer to multiple rounds of characterization samples (up to 10 rounds of characterization were performed). SYS_2 generally refers to the second round of characterization samples when only two rounds of characterization were performed.
- RAS and FSS-BIAS - Bias samples. Initially RAS was intended to represent pre-remediation bias samples performed in support of remedial actions, and FSS-BIAS were post-remediation bias samples collected to confirm the success of remedial actions. The terms RAS and FSS-BIAS were not used consistently at sites where no remediation was performed.

There two trenches where the sequential sample numbers do not start at 1. Trench Unit 191 in Parcel C starts numbered samples at 19, and only samples from 19 on are provided in the SUPR. Similarly, Trench Unit 336 in Parcel C starts numbered samples at 6, and only samples from 6 on are provided in the SUPR.

Column F – FinalDetLimit

This column provides the detection limit for each result reported on the lab reports provided as attachments to the SUPRs and FSSRs. Various referred to as detection limit, minimum detectable activity (MDA), and minimum detectable concentration (MDC) in the reports.

Column G – ReportableResult

This column provides identifies if the analysis was performed by the onsite lab or one of the offsite labs:

- FALSE - Onsite lab performed the analysis.
- TRUE - Offsite lab performed the analysis.

Column H – FinalError

This column provides the estimate of total measurement uncertainty for each result. The total uncertainty is taken from the lab reports provided as attachments to the SUPRs and FSSRs. The total uncertainty was based on 3-sigma counting uncertainties at the beginning of the project for the onsite lab, but was switched to 2-sigma counting uncertainties to be consistent with the offsite labs.

Column I – Volume

This column provides the sample mass used for analysis. Generally, this is only provided for onsite lab samples. Sample mass was taken from the lab reports provided as attachments to the SUPRs and FSSRs.

Column J – StartTime

This column provides the date and time the gamma spectroscopy measurement was started in the onsite lab. This is taken from the lab reports provided as attachments to the SUPRs and FSSRs.

Column K – X-COORD

This column provides the California State Plane Easting coordinate. Values were taken from NIRIS database when they were available.

Column L = Y-COORD

This column provides the California State Plane Northing coordinate. Values were taken from NIRIS database when they were available.

Column M – Parcel DSC

This column provides the Parcel identifier. Lists the Parcel at HPNS where the sample was collected.

Column N – SITEDSC

This column provides the Fill Unit identifier. Lists the overburden or excavation soil unit number for onsite soil used as backfill. The fill is associated with the trench that was backfilled, the final location of the soil. The source of the soil, the trench where the soil was excavated from, is provided in the RACR for most overburden, peripheral, and excavation soil units.

Column O – TRENCHUNIT

This column provides the Trench Unit identifier for the Sanitary Sewer and Storm Drain Removal project.

Trench Units use a 5-digit identifier, the letter S followed by a four-digit number. Note that both Parcel B and the North Pier in Parcel C include identifiers S0001 through S0011. Note that Trench Units 50A and 51A may be referred to as S050A and S051A, or as S0500 and S0510 where any letters have been replaced with the number 0 to provide a 4-digit number.